

REMARKS

Entry of the above amendments and reconsideration of this application are requested. Upon entry of the amendments, this application will contain claims 27-54 pending and under consideration. In view of the amendments and the following remarks, it is believed that all rejections have been overcome and that this application is in condition for allowance.

Oath/Declaration

The Examiner indicates that the oath/declaration is defective because the provisional applications are referenced under 35 U.S.C. §120 rather than §119(e). A supplemental oath/declaration has been routed for signature which corrects the defects identified by the Examiner. The supplemental document will be submitted when received.

Specification

The specification was objected to for including incorrect priority data. The priority date of U.S. Patent Application Serial No. 08/916,490 was inadvertently stated to include the priority date of a later filed provisional application (i.e., August 23, 1996) rather than its actual filing date of August 22, 1997. The priority date of this application has been amended to its correct filing date such that each provisional application is reflected as being filed before the parent application. In view of this amendment this rejection is believed to be overcome.

Claims

Claim 27 stands rejected as lacking antecedent basis for the term "sources." Claim 27 has been amended such that it now refers to a "source," which does have antecedent basis. In view of this amendment it is believed that this rejection has been removed.

Claims 50-54 stand rejected under 35 U.S.C. §112 as being indefinite. The Examiner contends that the phrase "peroxy compound is a peracid" is confusing and contradictory. Applicant respectfully disagrees.

A peroxy compound is generally known in the art as being any compound containing a peroxy group. Such compounds do not necessarily have to be peracids, which form a sub-group of peroxy compounds. Indeed, non-peracid peroxy compounds are disclosed in the application. For example, hydrogen peroxide is taught to be a suitable peroxy compound for use in the invention (see page 12, lines 10-12). Accordingly, withdrawal of this rejection is respectfully requested.

Claims 27-54 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Badylak et al. (U.S. Patent No. 5,695,998). The Examiner alleges that Badylak et al. generally teach disinfecting submucosal tissue after it has been delaminated from a tissue source while the present application teaches disinfecting such a tissue before it has been delaminated from a tissue source. As a basis for rejecting the claims over the Badylak '998 patent, the Examiner contends that the present application fails to disclose "that changing disinfecting the tissue prior to

delamination provides some advantage, is done for a particular purpose, or solves a stated problem.” However, contrary to this statement in the Action, the application does disclose that disinfecting prior to delamination does provide very significant advantages to the process.

At page 10, lines 3-10, the application discloses:

In particular, it has been discovered that disinfecting the tela submucosa source, followed by removal of a purified matrix including the tela submucosa, e.g. by delaminating the tela submucosa from the tunica muscularis and the tunica mucosa, minimizes the exposure of the tela submucosa to bacteria and other contaminants. In turn, this enables minimizing exposure of the isolated tela submucosa matrix to disinfectants or sterilants if desired, thus substantially preserving the inherent biochemistry of the tela submucosa and many of the tela submucosa's beneficial effects.

At page 10, lines 18-25, the application discloses:

Intestines harvested from healthy, nondiseased animals will contain blood vessels and blood supply within the intestinal tract, as well as various microbes such as *E. coli* contained within the lumen of the intestines. Therefore, disinfecting the whole intestine prior to delamination of the tela submucosa substantially removes these contaminants and provides a preferred implantable tela submucosa tissue which is substantially free of blood and blood components as well as any other microbial organisms, pyrogens or other pathogens that may be present.

At page 11, lines 10-18, the application discloses:

As discussed above, it has been discovered that a highly pure form of an implantable tela submucosa collagen matrix may be obtained by first disinfecting a tela submucosa source prior to removing a purified collagen matrix including the tela submucosa layer, e.g. by delaminating the tela submucosa source. It has also been discovered that certain processing advantages as well as improved properties of the resultant tela submucosa layer are obtained by this process, including greater ease in removing attached tissues from the submucosa layer, and a characteristic, low contaminant profile.

At page 15, lines 11-23, the application discloses:

It has been found that by following this post-disinfection-stripping procedure, it is easier to separate the tela submucosa layer from the attached tissues, e.g. at least from attached tunica muscularis tissue, as compared to stripping the tela submucosa layer prior to disinfection. Moreover it has been discovered that the resultant tela submucosa layer in its most preferred form exhibits superior histology, in that there is less attached tissue and debris on the surface compared to a tela submucosa layer obtained by first delaminating the tela submucosa layer from its source and then disinfecting the layer. Moreover, a more uniform tela submucosa tissue can be obtained from this process, and a tela submucosa having the same or similar physical and biochemical properties can be obtained more consistently from each separate processing run. Importantly, a highly purified, substantially sterile tela submucosa is obtained by this process.

Moreover, Example 5 of the application demonstrates that a uniquely low endotoxin level (EU/g) can readily be achieved when following the claimed process steps. Specifically, Example 5 states:

EXAMPLE 5

Three sections of small intestine are processed by differing methods. The first is rinsed in tap water, disinfected for 2 hours in a 5% by volume aqueous ethanol solution comprising 0.2% by volume peracetic acid, pH about 2.6, delaminated to the tela submucosa, rinsed in purified water, and rapidly frozen. The second is rinsed in tap water, delaminated to the tela submucosa, rinsed in purified water, disinfected according to the methods of Example 1 in U.S. Patent No. 5,460,962 (treatment for 40 hours in a 0.1% by volume aqueous solution of peracetic acid, buffered to pH 7.2), and rapidly frozen. The third is rinsed in tap water, delaminated to the tela submucosa, rinsed in purified water, disinfected according to the methods of Example 2, in U.S. Patent No. 5,460,962 (treatment in 0.1% by volume peracetic acid in high salt solution, buffered to pH 7.2), and rapidly frozen. All three samples were tested for endotoxins. The endotoxin levels were <0.14 EU/g for the first sample, >24 EU/g for the second sample, and >28 EU/g for the third sample.

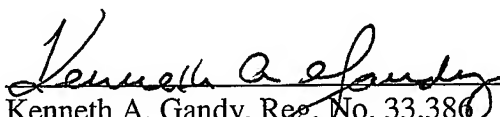
As can be seen, the application does in fact disclose that the claimed invention provides advantages and solve problems in the field. Moreover, there is absolutely no suggestion in the

Badylak '998 patent to disinfect the source tissue prior to removal of the target matrix material – exactly the opposite is taught. The basis for the rejection over the Badylak '998 patent is therefore removed, and withdrawal of the rejection is solicited.

Claims 27-30, 34-36 and 45-46 stand rejected under 35 USC 103(a) over Badylak, US 5,372,821. Like the rejection discussed above, this rejection is based on the assertion that “Applicants have not disclosed that changing disinfecting the tissue prior to delamination provides some advantage, is done for a particular purpose, or solves a stated problem”. As cited above, the application does disclose that the claimed method provides advantages and solves problems. Thus, the basis for this rejection is removed, and its withdrawal is solicited.

In view of the foregoing amendments and remarks, allowance of this application containing claims 27-54 is solicited. The Examiner is asked to please telephone the undersigned attorney if it is believed that any rejection or objection remains applicable to the application, in order to afford an opportunity for an interview to consider amendments or arguments to overcome the rejection or objection to expedite a successful conclusion of this prosecution.

Respectfully submitted,

By 
Kenneth A. Gandy, Reg. No. 33,386
Woodard, Emhardt, Moriarty, McNett & Henry LLP
111 Monument Circle, Suite 3700
Indianapolis, Indiana 46204-5137
(317) 634-3456